

ABSTRACT

A dual proportional pressure control valve can include a cage, a spool, and an electromagnetic proportional actuator having a pair of coils. The control valve can deliver a stable secondary pressure to one of two different load ports from a primary pressure source. Which load port receives the secondary pressure can be dependent upon which coil of the activator is energized. Since the spool is driven directly by the electromagnet to control its sliding position, its secondary pressure can correspond to the strength of the electromagnet-energizing current. Secondary pressure feedback from the load port can act on an area defined by lands of the spool, which can have different diameters, or on the area formed by an axial hole in each end of the spool, thereby making the secondary pressure more controllable against disturbances. The valve can eliminate the need for a long, narrow internal hole in the spool and also provide an actuator chamber subjected only to a tank pressure by adding an additional tank port in the cage.